CLAIMS

1. An active magnetic bearing (100) with autodetection of position, the bearing comprising at least first and second opposing electromagnets (120, 130) forming stators disposed on either side of a ferromagnetic body (110) forming a rotor and held without contact between said electromagnets, the first and second electromagnets (120, 130) each comprising a magnetic circuit (121; 131) essentially constituted by a first ferromagnetic material and co-operating with said ferromagnetic body to define an airgap, together with an excitation coil (122; 132) powered from a power amplifier whose input current is servo-controlled as a function of the position of the ferromagnetic body relative to the magnetic circuits of the first and second electromagnets, the position of the ferromagnetic body (110) being measured from the inductance detected between the two electromagnets (120, 130) in response to simultaneous injection into both opposing electromagnets of a sinusoidal current at a frequency that is greater than the closed loop passband of the system,

the bearing being characterized in that the magnetic circuit (121; 131) of each electromagnet further includes a portion (124; 134) in the vicinity of the excitation coil (122; 132) that uses a second ferromagnetic material having magnetic permeability that is lower than that of the first material and electrical resistivity that is higher than that of the first material so as to encourage the passage of the high frequency magnetic fields that are generated in the bearing.

2. A bearing according to claim 1, characterized in that the low permeability and high resistivity portion (124; 134) is formed by a piece made of powder comprising grains of magnetic material that are electrically insulated from one another.

3. A bearing according to claim 2, characterized in that the powder comprises grains of iron that are electrically insulated from one another.

4. A bearing according to any one of claims 1 to 3, characterized in that the ferromagnetic body (110) forming the rotor includes at least one portion (112) of permeability that is smaller and of resistivity that is greater than the remainder of said body so as to encourage the passage of high frequency magnetic fields, said portion being disposed substantially in register with the low permeability and high resistivity portion (124; 134) formed in the electromagnet.

5. A bearing according to claim 4, characterized in that the low permeability and high resistivity portion (112) of the rotor-forming body (110) is formed by a part made of powder comprising grains of magnetic material that are electrically insulated from one another.

6. A bearing according to claim 5, characterized in that the powder comprises grains of iron that are electrically insulated from one another.

7. A bearing according claim 4, characterized in that the rotor-forming body (201) includes a stack (202) of ferromagnetic laminations, the laminations present in the low permeability and high resistivity portion (223) presenting thickness that is smaller than the thickness of those other laminations in the stack (202).

8. A bearing according to any one of claims 1 to 7, characterized in that the low permeability and high resistivity portion(s) present(s) magnetic permeability of about 100.

9. A bearing according to any one of claims 1 to 8, characterized in that the low permeability and high resistivity portion(s) present(s) electrical resistivity of about 50 Ωm.

10. A bearing according to any one of claims 1 to 9, characterized in that the active magnetic bearing (100) is of the axial type.

11. A bearing according to any one of claims 1 to 9, characterized in that the active magnetic bearing (200) is of the radial type.